Authorization Basis Amendment Request

ABAR Title: Part A HAR Significant and Bounding Hazard Evaluations & ISAR Fundamental Aspects of Design

ABAR #: ABAR-W375-00-00014 Revision: 0 Associated ABCN #: ABCN-W375-00-00026

Originator: Thomas R. McDonnell Date: 20 Apr 2000

Print Name

Description of proposed revision:

a) Adds Appendix E, "Significant and Bounding Hazard Evaluations," to the Part A Hazard Analysis Report (BNFL-5193-HAR-01). This appendix identifies the changes to the significant and bounding hazard evaluations that have occurred since approval of the Part A HAR as a result of design changes and of hazard evaluations conducted during ISM Cycles I and II.

b) Adds Appendix A to the Initial Safety Analysis Report (ISAR) (BNFL-5193-ISAR-01, Rev.0) that identifies, verbatim, the first occurrences of the Fundamental Aspects of Designs portions that are considered to be part of the authorization basis. Appendix A identifies the Fundamental Aspects of Design (FAD) contained in the body of the ISAR and shows the changes to the FAD due to the Part B1 changes to the plant design, process descriptions and arrangement. The changes involve:

1. Separation of the process building into separate buildings with specific process functions
2. Providing separate storage areas for failed melters, spent melters and secondary radioactive waste
3. Providing holdup receipt of LAW waste transfer changes from DOE *
4. Providing treatment and temporary storage of HLW solids *
5. Combined Solids and Strontium/TRU precipitate removal
6. Changing radiation shielding for the LAW melters from concrete cells to local metal enclosures.
7. Revised classification of SSCs to be consistent with the SRD classification of Safety Design Class and Safety Design Significant
8. Clarifying the cascading ventilation design philosophy, including the lack of filtered exhaust for portions of the C2 HVAC system that have a low contamination potential. This change needs to be made to ISMP section 3.7.2, as well as to the ISAR.

This revision is a composite of the changes required to update the HAR and the ISAR portions considered to be authorization basis to reflect the current plant configuration and hazard analysis. Only the portions of the HAR that are identified as significant and bounding hazards and the ISAR portions that are identified as fundamental aspects of design are revised.

Reason(s) for the proposed revision:

a) By RU letter 99-RU-0338 (dated June 10, 1999), the RU approved the authorization basis amendment request for the ISMP to state that only the parts of the Hazard Analysis Report (HAR) that address significant or bounding hazard evaluations are considered a part of the authorization basis. ISMP section 3.3.1, "Content of the Authorization Basis," subsection 3.3.1.8, states: "Those portions of the Part A Hazard Analysis Report (HAR) that constitute bounding or significant hazards or hazardous situations are considered to be part of the authorization basis."

However, the HAR does not specifically identify the significant and bounding hazard evaluations. The new Appendix E identifies changes to the significant and bounding hazard evaluations that have occurred since approval of the Part A HAR, Rev.0, such that the current Authorization Basis is identified. The justification for these changes is presented in Attachment #1 to this ABAR.

b) In accordance with ISMP section 3.3.1.8, those portions of the ISAR that are considered the fundamental aspects of design form the Authorization Basis. This change to the ISAR is an update of the fundamental aspects of design that are considered to be part of the authorization basis. Although the PSAR will supercede the ISAR, the ISMP requires the management of design changes affecting the authorization basis.

1. **Separation of Process Buildings**

During the Part B-1 design development, K0104/REP/014/MEC "Split Facilities Alternative Options Evaluation Study" recommended that the project should be developed as three separate facilities. The operational dates associated with a single facility would not meet the client's expectations. The separation of the LAW Building from the other facilities allows the Pretreatment and HLW Vitrification facilities to be operational by about 2 years earlier than when combined. Separation

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Reason(s) for the proposed revision:

of the HLW Vitrification from the Pretreatment facility significantly reduces the risk to the Pretreatment schedule and operational date. The provision of independent Pretreatment and HLW Vitrification off gas and ventilation systems simplifies the commissioning strategy and reduces the risk to the overall schedule.

2. **Spent Melter Staging, HLW Failed Melter Store, Central Waste Stores**

Optimization of the HLW melter breakdown area has resulted in separate storage areas for failed HLW melters and secondary waste that are away from the main operating equipment areas. A separate area for staging of spent melters prior to shipment is also provided. This arrangement results in the independent storage of radioactive materials that reduces space demands and interactions with the process areas of the plant.

3. **Add Six LAW Feed Receipt Vessels to the Pretreatment Building ***

Engineering Trade study RPT-W375PT-PR00002, Rev.0, " Engineering Study of Alternative for a LAW Feed Receipt System" demonstrated that planned upgrades to 241-AP-106 tank would not be adequate to meet LAW feed requirements for the Pretreatment facility. Contract changes have changed the processing flow to eliminate operation of the AP-106 tank from BNFL's scope. This change added waste receipt holdup and process treatment equipment to the design.

4. HLW Feed Receipt & Pretreatment Design Changes *

Contract changes have changed the processing flow to require treatment and storage of the solids. This change added process treatment equipment and solids storage to the design.

5. Solids and Strontium/TRU Precipitate Removal Combination

The sequential removal of solid and then strontium and TRU precipitate from the LAW feed has been combined based on studies BNFL-RPT-007 "Washing of the AN-107 Entrained Solids" dated August 1999, and BNFL-RPT-0027 "Combined Entrained Solids & Strontium/TRU Removal from AN-107 Diluted Feed" dated February 2000, showing that sequential removal is not practical. A Contract change has been developed to change section H-9 for Mod 13 to change this process sequence. This change does not result in any equipment design change. (Reference SD-W375PT-PR00013 System Description For LAW Ultrafiltration-System PT-230)

6. Changing Radiation Shielding for the LAW Melters from Concrete Cells to Local Metal Enclosures

Radiation shielding for the LAW melters has been changed from concrete cells walls to metal shielding surrounding each melter. Preliminary evaluations of the LAW radiation source term data highlighted an opportunity to reduce bulk radiation shielding requirements and remote handling equipment and afford a greater degree of operator intervention. This will improve operational flexibility and operator efficiency while reducing capital costs. These design changes will satisfy the requirements of the RPP-WTP ALARA program.

7. Categorization of SSCs

Changes to the original categorization of SSCs important to safety were replaced with new terms described in Appendix 1A (BNFL letter W338-98-0004) and clarifications provided in BNFL letter W338-0011 which were reviewed by the RU as part of the ISAR. The classification terms, classification methodology, and requirements were subsequently described in authorization basis document BNFL-5193-SRD-01, Rev 2e, "Standards Requirements Document," approved by the RU. To avoid duplicate and/or conflicting requirements, the classification of SSCs was changed to refer to the SRD.

8. Cascading Ventilation Design Philosophy

Clarifies the cascading ventilation design philosophy for areas that have no or low potential for radiological contamination. If such areas are isolated from other radiological contaminated areas, the ventilation system does not require filtered exhaust. It should be noted that all HVAC effluent release points are monitored.

** The new ISAR fundamental aspects of design marked with an asterisk (*) caused or contributed to new or changed HAR significant or bounding hazard evaluations. Consequently, as noted in Safety Evaluation SE-W375-00-00018, Rev. 0, these ISAR changes constitute a reduction in commitment, requiring RU approval. The remaining ISAR changes do not require RU approval; however, they are included in this ABAR for completeness.*

Description of the proposed implementation schedule:

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Description of the proposed implementation schedule:

The Authorization Basis will be revised within 30 days following RU approval. The revision will be fully implemented within 90 days following RU approval.

If the revision involves the deletion or modification of a standard previously identified in the approved SRD, provide:

A. An evaluation that demonstrates the revised SRD continues to identify a set of standards that will provide adequate safety, comply with all applicable laws and regulations, and conform to top-level safety standards; and

B. A certification that the revised SRD identifies a set of standards that continues to provide adequate safety, comply with all applicable laws and regulations, and conform to top-level safety standards.

Attachments:

1. Copies of the AB document(s) or appropriate excerpt showing the proposed revision(s).
2. Copy of safety evaluation.
3. If not included above, justification for the revision and demonstration that the revision is safe.
4. Items A and B above, if applicable.

Manager, Engineering	Date
Radiological, Nuclear, and Process Safety Manager	Date
Manager, Quality Assurance	Date
Chairman, Project Safety Committee	Date
RPP-WTP General Manager	Date